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INTRODUCTION.

This REVIEW is based on reports from 2,208 stations in the United States and Canada for August, 1889, comprising data received from regular and voluntary observers of both countries. These reports are classified as follows: 180 Signal Service stations; 117 monthly registers from United States Army post surgeons; 1,381 monthly registers from state weather service and voluntary observers; 24 Canadian stations; 171 stations through the Central Pacific Railway Company; 335 marine reports through the co-operation of the Hydrographic Office, United States Navy; marine reports through the "New York Herald Weather Service;" monthly weather reports from the local weather services of Arkansas, Colorado, Dakota, Illinois, Indiana, Iowa, the Iowa Weather Crop Bulletin Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Texas, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR AUGUST, 1889.

During August, 1889, six low pressure storms appeared within the region of observation over the North American continent, the average number traced for the corresponding month of the last fifteen years being nine and seven-tenths, and eight storms were traced over the north Atlantic Ocean. Severe local storms were most frequently reported in New York, Pennsylvania, Minnesota, and Kansas, and they were more generally noted on the 1st, 3d, 4th, 7th, 13th, and 14th. The most important storm of the month on the north Atlantic Ocean advanced northward off the coast of the United States between the thirtieth and fortieth parallels of latitude from the 25th to 27th, inclusive, attended at sea by gales of great violence. The disturbances in the Caribbean Sea and the Gulf of Mexico preceding the appearance of this storm did not, apparently, possess well-defined movements of translation. The Arctic ice reported did not differ materially in distribution and quantity from the average for the month, and the fog reported west of the fortieth meridian west of Greenwich about equalled the usual amount for August.

The mean temperature was lower than usual in the Atlantic coast states and thence westward south of the Great Lakes to the eastern slope of the Rocky Mountains, in the valley of the Columbia River, and at Los Angeles, Cal.; elsewhere the month was generally warmer than the average August. In districts where the mean temperature was below the average the departures were less than five degrees, while at stations in the British Possessions north of Montana the mean temperature was more than five degrees above the average August values. At Fort Assinniboine, Mont., the highest absolute temperature recorded for August during the period of observation was reported, while at Portland, Me., Jacksonville and Key West, Fla., the minimum temperature was lower than noted for the corresponding month of previous years. Killing frost occurred at Galena, Ill., on the 1st; at Grand Rapids, Wis., the night of the 4–5th, and at Linkville, Oregon, on the 19th.

The rainfall of the month was very irregularly distributed, and was greatest in areas in the Atlantic coast states, and in Nebraska, where it exceeded ten inches. Over a considerable portion of California and Nevada no rain fell, and in parts of Illinois, Indiana, Iowa, Michigan, and Pennsylvania the rainfall for the month was the least ever reported for August. Snow was reported at one place only, Greensburgh, Pa., on the 15th. Disastrous floods occurred in parts of Connecticut, New Jersey, Pennsylvania, Maryland, Virginia, Colorado, Missouri, and Nebraska, and damaging drought was reported in sections of Montana, Dakota, Missouri, Kansas, Utah, Texas, Iowa, Michigan, Minnesota, Illinois, and Ohio.

A well-defined auroral display was observed at Saint Vincent, Minn., on the night of the 28–29th; noteworthy solar halos were reported at three stations in New York on the 23d; and brilliant meteors were noted in Georgia on the 11th, in Texas on the 14th, and in Washington Territory on the 22d.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for August, 1889, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on chart ii by isobars. The difference between the mean pressure for August, obtained from observations taken twice daily at the hours named, and that determined from hourly observations varied at the stations named below as follows: At Washington, D. C., Philadelphia, Pa., New York, N. Y., Boston, Mass., Saint Louis, Mo., and Chicago, Ill., the mean of the 8 a. m. and 8. p. m. observations was higher by .011, .006, .006, .007, .001, and .003, respectively, than the true mean pressure.

The mean pressure for August, 1889, was highest within an area extending from the Atlantic coast between the twenty-eighth and thirty-eighth parallels to the Ohio Valley, where the values rose above 30.10, the highest mean readings, 30.14, being noted at Charlotte, N. C., and Knoxville, Tenn. In districts east of the ninety-seventh meridian and south of the latitude of Lake Superior, and on the Pacific coast north of the fortieth parallel, the mean pressure was above 30.00. The mean pressure was lowest within an area extending from the lower Colorado valley over southeastern California and southwestern Nevada, where the readings were below 29.80, the lowest mean values, 29.76 and 29.77, being noted at Yuma, Ariz., and Keeler, Cal., respectively. From this region northeastward over the middle and northern plateau regions and the northeastern slope of the Rocky Mountains the mean pressure was below 29.90, and fell below 29.85 in the British Possessions north of Montana.